



Division of Biological Resources Water Resources Branch

Water-Data Report 2013

413721083124001 Pool 2B at Ottawa NWR

LOCATION: Lat. 41°37'21.08"N, long 83°12'38.44"W, near Oak Harbor, OH. Ottawa County, OH on in management unit Pool 2B at Ottawa National Wildlife Refuge.

Maximum Surface Area: 97 acres

SURFACE WATER RECORDS

PERIOD OF RECORD: June 2009 to present

GAGE SITE: Design Analysis 522+, in a square metal gage house, in communication with in situ Esterline pressure transducer, YSI water quality sonde (6920) and AccQcomm interface module. GOES antenna in communication with DA 522+ DCP transmits every hour in a 10 second window at a baud rate of 300. AccQcomm interface module in communication with Teledyne RD Instruments vertical acoustic doppler. Instruments are powered by two 1.2 ampere solar panels run to 2 deep cycle marine battery through 2 Sunsaver power regulators. Solar panels, GPS and GOES antennas are attached to two masts, connected to the gage house. Datum of gage is in the International Great Lakes Datum of 1985.

NATIONAL WILDLIFE REFUGE: Ottawa NWR

COOPERATION: USGS Great Lakes Science Center

REMARKS: Records coded fair for the 2013 calendar year.

EXTREMES FOR THE PERIOD OF RECORD: Maximum gage height, 573.57 ft, October 20, 2010; minimum gage height, 568.59 ft, January 6, 2011.

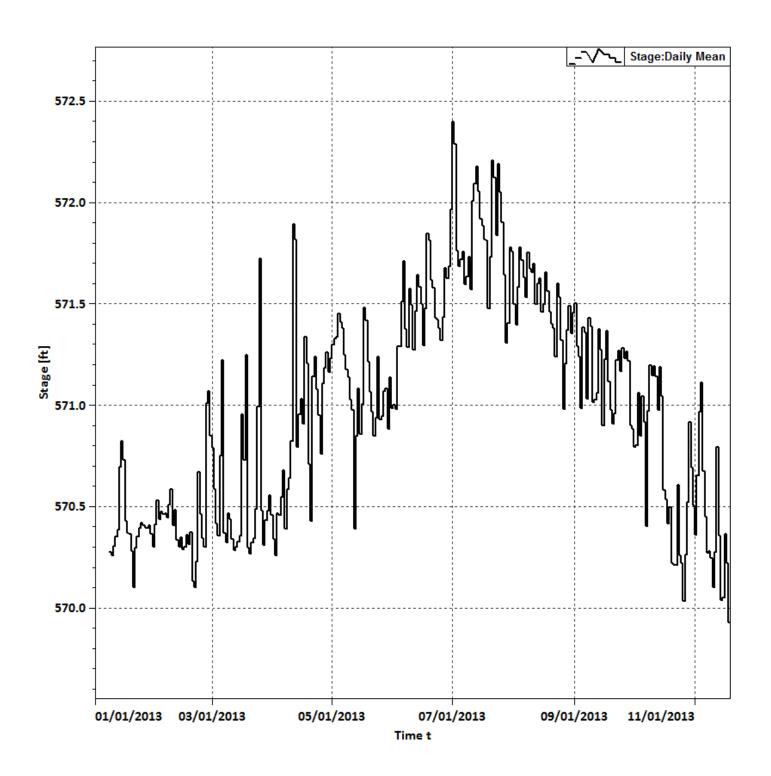
EXTREMES FOR CURRENT YEAR: Maximum gage height, 572.67 ft, July 1; minimum gage height, 569.89 ft, November 18.

U.S. Department of Interior

U.S. Fish and Wildlife Service

GAGE HEIGHT, FEET CALENDAR YEAR 2013 DAILY MEAN VALUES

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1		570.53	570.79	570.34	571.30	571.00	572.40	571.50	571.50	570.79	570.36	
2		570.44	570.58	570.26	571.33	570.98	572.29	571.40	571.29	570.80	570.65	
3		570.48	570.42	570.47	571.33	571.29	571.76	571.58	571.24	571.06	570.97	
4		570.46	570.35	570.46	571.45	571.29	571.68	571.78	570.98	570.85	571.11	
5		570.47	570.75	570.55	571.41	571.51	571.72	571.71	571.38	571.04	570.67	
6		570.44	571.22	570.68	571.38	571.71	571.76	571.63	571.36	570.92	570.45	
7		570.51	570.37	570.39	571.24	571.37	571.59	571.53	571.03	570.40	570.27	
8	570.27	570.58	570.32	570.58	571.17	571.29	571.63	571.75	571.43	570.97	570.28	
9	570.26	570.41	570.47	570.64	571.14	571.57	571.73	571.67	571.39	571.20	570.24	
10	570.30	570.48	570.44	570.82	571.03	571.49	571.57	571.65	571.01	571.15	570.10	
11	570.35	570.33	570.34	571.89	570.98	571.27	572.01	571.70	571.03	571.19	570.27	
12	570.38	570.30	570.28	571.82	570.39	571.46	572.09	571.50	571.06	571.14	570.79	
13	570.70	570.35	570.30	570.79	570.85	571.64	572.18	571.60	571.37	570.97	570.35	
14	570.82	570.29	570.33	570.95	571.08	571.58	572.05	571.62	571.27	571.19	570.04	
15	570.73	570.30	570.36	571.03	570.86	571.50	571.92	571.46	570.90	571.04	570.05	
16	570.43	570.36	570.95	570.91	571.00	571.29	571.88	571.50	571.23	570.58	570.37	
17	570.37	570.31	570.73	571.34	571.48	571.47	571.81	571.65	571.37	570.53	570.22	
18	570.37	570.37	571.25	571.20	571.42	571.85	571.81	571.56	571.11	570.41	569.92	
19	570.28	570.13	570.30	570.71	571.21	571.81	571.47	571.46	570.97	570.49		
20	570.10	570.10	570.27	570.43	571.06	571.62	571.73	571.40	570.91	570.22		
21	570.30	570.23	570.32	571.14	570.97	571.58	572.21	571.38	570.96	570.21		
22	570.35	570.67	570.34	571.24	570.85	571.43	572.12	571.24	571.22	570.21		
23	570.39	570.46	570.49	571.08	570.94	571.42	571.84	571.60	571.27	570.61		
24	570.42	570.34	570.99	570.95	571.24	571.38	572.19	571.53	571.17	570.26		
25	570.41	570.30	571.72	570.76	570.93	571.32	572.05	571.32	571.28	570.22		
26	570.40	571.01	570.48	571.11	570.95	571.44	571.90	570.98	571.23	570.03		
27	570.39	571.07	570.31	571.19	571.07	571.68	571.64	571.20	571.27	570.26		
28	570.41	570.85	570.43	571.26	571.08	571.62	571.31	571.37	571.22	570.52		
29	570.37		570.48	571.16	570.88	571.68	571.40	571.49	570.90	570.92		
30	570.30		570.56	571.23	571.14	571.96	571.78	571.35	570.88	570.69		
31	570.41		570.46		570.98		571.76	571.46		570.51		
Mean		570.45	570.56	570.91	571.10	571.48	571.85	571.50	571.17	570.69		
Max		571.07	571.72	571.89	571.48	571.96	572.40	571.78	571.50	571.20		
Min		570.10	570.27	570.26	570.39	570.98	571.31	570.98	570.88	570.03		



WATER QUALITY RECORDS

PERIOD OF RECORD: June 2009 to present. Data collection is continuous throughout the open-water period.

SPECIFIC CONDUCTANCE: April - November 2013 WATER TEMPERATURE: April - November 2013 DISSOLVED OXYGEN: April - November 2013

pH: April - November 2013

TURBIDITY: April - November 2013

INSTRUMENTATION: Design Analysis 522+ in communication with YSI (Model 6920) water quality probe. Water quality data is collected at 30-minute intervals.

REMARKS: Regular cleaning and calibration of water quality sondes produced good quality records in 2013. Equipment power losses in October and November did cause intermittent data loss.

SPECIFIC CONDUCTANCE: Record coded good for the 2013 calendar year. WATER TEMPERATURE: Record coded good for the 2013 calendar year. DISSOLVED OXYGEN: Record coded good for the 2013 calendar year.

pH: Record coded good for the 2013 calendar year.

TURBIDITY: Record coded good for the 2013 calendar year.

SPECIFIC CONDUCTANCE [μ S/cm]

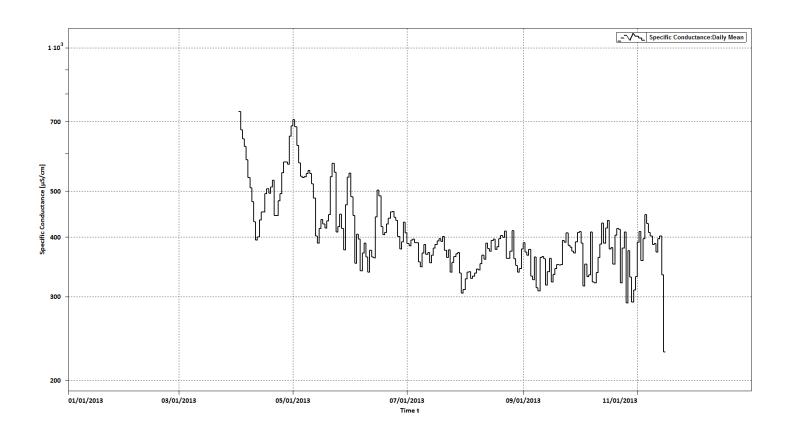
Day		January min max mea			Februa	ry		March	1		April			May			June	
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
	•			•			•			•			•					•
1													667	738	707	473	528	487
2										726	747	734	576	717	683	353	486	444
3										640	740	672	553	673	623	332	385	353
4										595	681	643	525	602	572	375	421	406
5										596	637	621	518	566	537	347	431	396
6										515	619	582	526	548	533	326	354	340
7										317	597	534	496	572	535	343	392	371
8										473	589	508	533	573	544	377	400	388
9										424	546	475	542	600	552	317	391	364
10										396	486	431	514	555	544	314	357	337
11										384	418	395	501	531	518	356	402	375
12										384	435	400	463	504	483	319	376	364
13										420	451	435	382	473	402	298	448	362
14										434	478	452	382	394	388	422	484	441
15										440	476	452	390	450	417	471	541	502
16										474	538	494	425	458	436	406	540	489
17										460	548	505	415	441	426	402	463	421
18										489	510	495	409	434	418	390	423	405
19										491	562	509	414	462	433	397	426	409
20										493	609	527	436	461	446	412	447	426
21										411	529	445	438	591	536	426	455	439
22										422	478	444	566	577	572	437	467	452
23										458	495	477	452	583	548	427	470	453
24										482	515	494	374	455	410	419	465	440
25										490	571	546	379	502	421	380	479	434
26										548	595	575	405	494	447	380	426	401
27										559	624	575	355	468	417	358	402	378
28										559	590	569	340	420	376	361	421	391
29										563	749	653	395	555	468	404	444	430
30										650	727	685	495	580	534	393	433	408
31													520	580	545			
Monthly										402	F70	F20	464	F2.4	400	204	420	440
Average										493	570	529	464	534	499	381	439	410

SPECIFIC CONDUCTANCE [μ S/cm]

Day		July			Augus	t		Septemb	oer		Octobe	er		Novemb	er		Decemb	er
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
			222	2.42			0=0		222				225	-00	222			
1	343	418	388	312	342	327	373	420	389	401	428	411	326	536	390			
2	372	397	384	325	348	338	350	383	372	311	436	389	326	473	411			
3	382	401	395	323	363	338	353	372	366	286	347	316	316	405	357			
4	381	409	396	318	349	328	372	384	377	301	386	351	355	438	397			
5	384	401	389	324	337	331	310	380	331	295	364	331	402	478	446			
6	384	402	389	331	340	336	308	343	326	296	376	333	370	457	427			
7	319	386	355	333	354	343	319	394	364	374	525	410	364	481	409			
8	330	364	346	329	351	341	284	358	313	294	438	322	340	471	402			
9	352	390	370	340	388	352	287	351	309	302	347	320	352	433	386			
10	367	399	386	349	388	367	295	383	363	298	388	337	258	457	387			
11	343	395	368	343	381	360	343	381	364	343	388	363	331	437	372			
12	358	383	371	367	410	388	295	391	360	356	414	387	365	419	397			
13	341	365	354	365	405	378	295	334	317	372	463	428	378	415	402			
14	353	375	367	356	389	373	322	367	338	350	455	389	220	415	333			
15	368	393	379	377	403	393	319	401	361	394	437	418	221	308	229			
16	380	393	386	374	409	396	313	335	322	412	458	433						
17	385	414	392	352	401	377	317	346	334	343	463	378						
18	388	406	397	365	390	382	316	361	343	335	444	381						
19	376	402	392	386	412	397	328	370	350	336	375	351						
20	375	433	401	394	410	403	331	369	350	375	462	404						
21	362	395	375	392	411	400	316	419	350	405	462	417						
22	358	370	362	391	442	412	355	427	394	378	452	415						
23	342	395	376	334	396	361	378	408	390	298	378	321						
24	333	350	338	353	372	361	402	418	408	332	415	379						
25	347	360	354	358	390	374	345	410	384	394	438	410						
26	357	370	365	381	447	412	363	390	381	220	436	291						
27	363	374	369	339	404	360	328	405	374	324	449	374						
28	357	384	372	324	373	349	333	397	370	288	384	330						
29	316	357	336	327	353	337	350	399	391	287	298	292						
30	300	316	305	327	364	344	396	420	409	297	321	310						
31	306	315	310	327	364 461	344 378	390	420	409	314	356	330						
31	300	313	310	323	401	3/8				314	330	330						
Monthly																		
Average	356	384	370	349	387	366	333	384	360	333	412	365						

SPECIFIC CONDUCTANCE SUMMARY STATISTICS

	Calendar Year 2013#	Period of Record (2009 - 2013)#
Minimum Daily Value [μS/cm]	220 (Oct 26)	172 (Jun 25, 2009)
Maximum Daily Value [μS/cm]	749 (Apr 29)	749 (Apr 29,2013)
Mean of Daily Values [μS/cm]	411	359



WATER TEMPERATURE [°C]

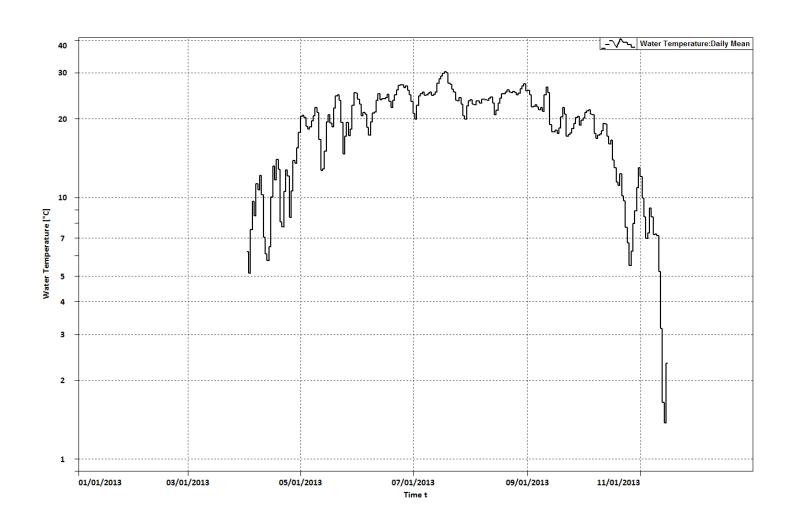
Day		January	/		Februar	У	<u> </u>	March	<u> </u>	<u> </u>	April		<u> </u>	May		<u> </u>	June	
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
1													17.9	24.6	20.4	21.9	25.4	23.8
2										5.0	6.9	6.2	19.0	22.8	20.7	19.9	24.4	22.7
3										2.0	9.5	5.1	18.5	22.5	20.3	17.6	23.4	20.5
4										3.3	10.9	7.5	17.5	20.4	18.8	19.3	23.4	21.2
5										7.4	13.4	9.7	16.3	20.3	18.3	19.0	23.0	20.9
6										6.7	9.9	8.5	16.6	21.1	18.7	17.8	20.0	18.5
7										8.4	14.6	11.3	17.4	22.4	19.6	17.0	17.9	17.3
8										8.5	12.8	10.7	18.5	23.1	20.5	16.8	22.5	19.4
9										10.8	14.5	12.2	19.8	24.9	22.1	19.7	22.3	21.0
10										8.5	11.8	10.2	18.3	22.4	21.2	20.8	21.7	21.2
11										6.0	8.5	7.1	14.3	18.3	16.7	20.7	27.4	23.5
12										5.8	6.3	6.1	9.8	14.3	12.7	23.6	25.6	25.0
13										5.3	6.1	5.7	8.9	18.4	12.9	22.3	25.6	23.6
14										5.1	8.6	6.5	12.4	17.7	15.1	21.7	26.3	23.8
15										6.9	13.7	10.0	17.0	22.3	19.5	22.2	25.3	23.9
16										12.7	13.7	13.2	17.6	24.1	20.7	22.5	26.5	24.1
17										10.5	13.1	11.7	17.0	21.0	19.2	23.0	26.8	24.8
18										10.0	17.5	14.0	16.9	20.6	18.6	21.5	24.9	23.3
19										7.9	16.2	12.8	18.1	25.9	22.0	19.8	24.4	22.1
20										6.3	9.8	8.1	21.9	27.2	24.5	21.1	25.8	23.5
21										5.3	10.3	7.7	23.0	27.0	24.7	22.5	26.5	24.7
22										7.6	15.0	10.6	22.7	24.2	23.5	23.8	28.1	25.7
23										10.2	15.0	12.7	14.4	22.7	19.4	25.2	28.6	26.9
24										9.5	14.4	12.1	11.3	17.4	14.7	25.4	28.5	26.9
25										6.5	9.5	8.4	14.5	20.6	17.2	25.4	28.8	26.9
26										7.2	13.6	10.6	15.9	24.3	19.4	24.6	28.5	26.3
27										11.5	16.8	13.8	15.6	20.0	17.2	25.3	29.0	26.7
28										12.8	13.8	13.5	15.4	21.5	18.3	24.9	26.6	25.7
29										13.5	18.8	15.5	19.5	26.0	22.5	23.2	26.1	24.7
30										15.5	19.8	17.8	22.5	27.9	25.2	22.4	24.3	23.3
31													23.3	26.1	25.0			
Monthly																		
Average										8.2	12.6	10.3	17.2	22.3	19.7	21.7	25.3	23.4

WATER TEMPERATURE [°C]

Day		July			August			Septemb	er		Octobei	r		Novembe	er		Decemb	er
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
4	40.7	22.7	20.0	22.4	25.0	22.7	247	26.0	25.6	40.6	24.7	20.2	10.0	440	12.4			
1	19.7	22.7	20.9	22.1	25.0	23.7	24.7	26.8	25.6	18.6	21.7	20.2	10.0	14.0	12.1			
2	19.4	20.8	20.0	22.0	24.0	22.7	23.3	25.6	24.7	19.2	23.5	21.2	9.1	10.4	10.0			
3	20.2	24.8	22.5	21.2	24.7	22.7	21.4	23.3	22.2	20.2	22.6	21.4	7.6	9.1	8.5			
4	23.2	25.5	24.4	21.8	25.0	23.4	20.3	25.2	22.4	20.8	23.0	21.6	6.3	7.6	7.0			
5	23.7	27.1	25.0	23.0	24.0	23.4	21.6	24.1	22.6	20.6	21.4	20.8	6.3	8.3	7.3			
6	24.5	26.1	25.3	22.0	23.9	23.0	20.5	24.0	22.2	19.9	21.6	20.8	8.2	10.3	9.1			
7	23.8	25.6	24.6	22.5	25.4	23.7	19.8	23.1	21.7	15.2	19.9	17.6	7.3	9.9	8.4			
8	22.8	25.9	24.7	22.9	24.5	23.8	21.3	22.5	22.1	15.2	18.6	16.8	6.3	8.3	7.2			
9	23.8	26.8	25.0	22.2	26.9	23.6	20.4	22.8	21.4	16.2	18.5	17.4	5.7	8.8	7.2			
10	24.3	26.2	25.3	22.8	24.3	23.5	21.7	28.1	24.7	16.0	19.1	17.5	5.7	8.1	7.1			
11	22.8	26.4	24.5	22.1	26.4	24.0	24.7	28.4	26.4	16.6	19.6	18.0	3.8	5.8	5.2			
12	22.6	27.0	24.8	23.5	25.2	24.2	21.0	26.7	25.1	17.5	20.7	19.1	1.8	4.0	3.2			
13	23.7	27.2	25.4	20.8	23.7	23.0	16.9	21.0	19.0	17.8	20.4	19.1	1.0	2.6	1.6			
14	25.2	29.8	27.4	18.8	22.9	20.8	15.6	19.8	17.8	16.3	18.3	17.2	0.1	2.6	1.4			
15	26.7	32.0	28.4	19.8	23.3	21.6	16.7	18.8	17.8	15.2	16.6	16.0	1.8	3.4	2.3			
16	28.2	30.0	29.1	20.7	25.8	22.9	16.8	19.6	18.1	15.8	17.6	16.6						
17	28.1	32.2	29.8	22.1	26.0	24.0	15.8	19.3	17.6	12.6	15.8	13.9						
18	29.0	31.6	30.2	22.7	27.2	25.0	16.8	20.6	18.4	11.1	14.8	13.0						
19	28.5	31.8	30.1	23.0	27.0	24.9	18.2	22.5	20.3	10.2	12.8	11.5						
20	25.9	29.5	27.3	23.2	27.8	25.3	20.5	23.9	22.1	9.0	13.5	11.1						
21	25.4	29.4	27.1	24.3	27.5	25.8	18.7	22.3	20.8	10.7	14.4	12.3						
22	25.2	26.8	25.9	23.8	26.6	25.3	16.1	18.7	17.1	9.0	11.9	10.2						
23	23.9	27.1	25.3	23.3	27.4	25.1	16.0	19.2	17.4	8.4	11.7	9.7						
24	22.5	24.5	23.5	23.8	26.9	25.4	16.2	19.3	17.6	7.0	8.8	7.7						
25	21.5	25.8	23.4	23.4	27.5	25.2	16.7	19.8	18.3	6.0	7.5	6.7						
26	22.5	25.6	24.1	22.9	26.6	24.7	17.3	21.6	19.2	4.9	6.4	5.5						
27	21.5	24.0	22.8	23.9	26.4	25.1	18.3	22.6	20.2	4.0	9.6	6.2						
28	19.5	21.5	20.5	25.2	27.1	26.1	18.7	22.2	20.4	5.7	10.2	7.9						
29	18.6	21.4	20.0	24.8	28.7	26.6	18.5	20.4	18.9	7.4	10.3	8.9						
30	20.1	25.2	22.4	25.8	28.8	27.2	18.1	22.1	19.7	8.8	13.4	10.9						
31	22.4	24.4	23.4	24.3	26.8	25.5	10.1	22.1	13.7	11.8	14.0	13.0						
31	22.4	24.4	23.4	24.3	20.6	23.3				11.0	14.0	13.0						
Monthly																		
Average	23.5	26.6	24.9	22.7	25.9	24.2	19.1	22.5	20.7	13.2	16.1	14.5						

WATER TEMPERATURE SUMMARY STATISTICS

	Calendar Year 2013#	Period of Record (2009 - 2013)#
Minimum Daily Value [°C]	0.10 (Nov 14)	0.10 (Nov 14, 2013)
Maximum Daily Value [°C]	32.2 (Jul 17)	34.1 (Jul 7, 2012)
Mean of Daily Values [°C]	18.9	19.3



DISSOLVED OXYGEN [mg/L]

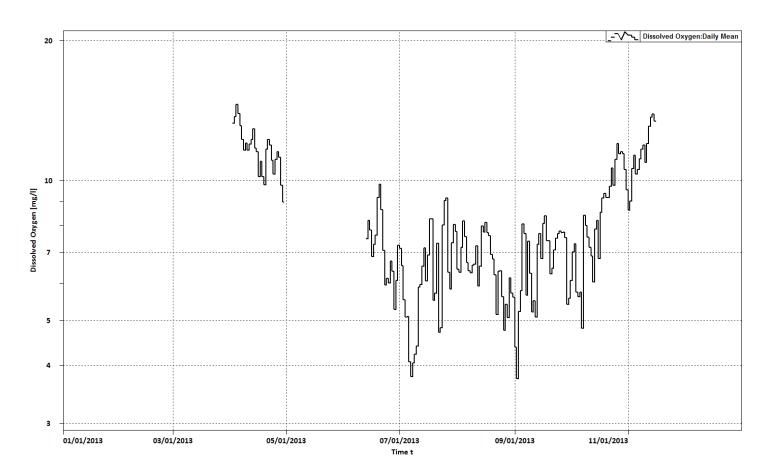
								D1330	LVLD OX	I OLIV [II	ig/ LJ							
Day		Januar	у		Februa	ry		March	1		April			May			June	
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
1																		
2										12.50	13.67	13.26						
3										12.85	15.01	13.69						
4										13.38	15.90	14.54						
5										12.79	15.06	13.91						
6										12.16	14.20	13.10						
7										10.99	13.19	12.24						
8										10.46	12.82	11.61						
9										10.00	13.59	12.02						
10										11.00	12.50	11.60						
11										11.38	12.25	11.96						
12										11.84	12.60	12.24						
13										12.18	13.64	12.89				6.05	8.09	7.48
14										10.94	12.94	11.72				5.78	10.99	8.19
15										10.43	11.86	11.53				6.68	8.97	7.81
16										9.68	11.02	10.17				5.68	8.20	6.86
17										10.31	11.81	10.99				4.90	9.37	7.29
18										8.69	10.95	10.19				6.14	9.03	7.62
19										7.70	10.97	9.77				6.74	11.73	9.18
20										10.92	12.43	11.66				7.54	12.06	9.79
21										11.84	12.96	12.24				7.48	10.23	8.64
22										11.33	12.99	11.91				5.38	8.69	7.07
23										10.39	11.62	11.03				3.95	8.16	5.95
24										9.54	11.22	10.31				4.49	8.51	6.15
25										10.06	11.75	11.08				3.66	7.89	6.02
26										10.68	13.01	11.51				4.42	10.17	6.70
27										9.91	12.78	11.21				4.24	8.25	6.38
28										9.26	10.04	9.75				4.09	6.57	5.27
29										8.54	9.35	8.98				3.66	9.04	6.09
30																5.68	9.05	7.24
31																		
Monthly																		
Average																		

DISSOLVED OXYGEN [mg/L]

Day		July			August			Septembe	er		October			November	•		Decemb	er
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
1	6.51	7.78	7.13	3.48	8.07	6.44	3.13	5.94	4.37	4.43	7.83	6.08	7.61	10.17	8.62			
2	5.51	7.20	6.54	4.97	7.23	6.33	2.26	5.33	3.74	3.88	8.95	7.00	7.31	10.51	9.02			
3	4.21	6.53	5.53	4.98	9.35	7.17	3.73	6.73	5.22	6.24	8.30	7.29	9.79	11.16	10.59			
4	3.95	5.99	5.08	6.34	9.95	8.18	3.82	7.80	5.79	2.43	7.20	5.74	10.78	11.78	11.32			
5	3.20	8.12	5.08	6.21	8.87	7.57	5.48	10.22	8.04	4.17	6.64	5.62	7.97	11.66	10.30			
6	2.66	5.13	4.07	5.23	7.87	6.64	6.16	8.87	7.68	3.89	6.78	5.74	9.56	11.08	10.54			
7	2.38	5.43	3.78	4.42	8.12	6.39	3.48	7.63	5.65	2.97	7.71	4.80	8.76	12.79	11.12			
8	3.24	5.11	4.05	4.18	8.26	6.32	4.83	9.32	7.40	6.73	9.48	8.40	10.87	12.31	11.66			
9	3.58	5.52	4.22	5.39	9.18	6.56	3.22	7.84	6.31	6.88	8.71	7.99	10.85	12.75	11.90			
10	3.46	5.00	4.40	4.92	8.51	6.60	1.75	7.50	5.21	5.12	8.83	7.55	10.38	11.68	10.92			
11	4.63	7.03	5.88	5.78	9.33	7.23	3.04	7.33	5.51	6.20	8.07	7.17	11.61	12.60	11.98			
12	4.44	8.14	5.96	4.54	8.19	5.93	2.38	7.54	5.08	5.81	7.88	6.87	12.27	13.68	13.05			
13	5.47	8.22	6.52	4.25	8.16	6.54	4.83	8.33	7.28	3.48	7.98	6.04	12.92	14.24	13.68			
14	5.57	8.53	7.16	6.35	9.54	7.96	5.79	8.72	7.68	6.72	8.91	7.85	12.66	14.29	13.87			
15	3.11	11.82	6.07	5.39	9.61	7.73	4.78	8.21	6.78	7.28	9.01	8.19	13.28	13.60	13.41			
16	5.31	9.03	6.91	6.27	10.07	8.12	5.78	9.68	8.08	3.83	9.12	6.78						
17	4.89	12.98	8.27	5.67	9.13	7.71	6.97	9.19	8.38	6.13	9.58	8.54						
18	4.58	11.72	8.25	5.13	9.66	7.60	4.26	8.87	7.41	6.38	11.27	9.16						
19	3.45	8.28	5.51	4.04	9.77	6.92	5.66	8.86	7.40	7.49	10.61	9.36						
20	3.61	8.79	5.72	4.28	9.42	6.76	4.58	8.08	6.28	8.43	10.18	9.18						
21	4.28	12.61	7.31	3.99	8.62	6.26	3.29	7.98	6.47	8.66	10.26	9.17						
22	3.08	6.25	4.71	1.99	7.09	5.15	5.63	7.86	7.08	7.64	11.69	9.69						
23	2.72	6.82	4.81	4.45	9.07	6.38	5.66	9.37	7.50	8.66	11.49	10.62						
24	5.78	10.69	8.01	3.76	8.40	6.38	6.05	8.97	7.67	8.99	11.12	9.76						
25	6.37	12.75	9.03	3.00	7.83	5.62	5.42	9.28	7.77	9.53	12.39	11.08						
26	5.78	11.88	9.16	1.33	6.69	4.75	6.18	9.02	7.72	11.58	12.44	12.00						
27	4.90	7.85	6.33	3.81	7.27	5.41	6.09	8.89	7.74	10.73	12.08	11.41						
28	3.72	8.05	5.83	3.17	7.25	5.06	6.20	8.31	7.53	10.78	12.05	11.53						
29	5.64	8.68	7.34	3.64	9.22	6.16	3.88	7.14	5.40	10.84	12.11	11.40						
30	6.04	9.50	8.04	2.56	8.02	5.72	2.76	8.12	5.58	9.73	11.19	10.54						
31	6.03	9.34	7.75	4.04	7.08	5.60				8.59	10.53	9.54						
Monthly																		
Average	4.45	8.41	6.27	4.44	8.54	6.55	4.57	8.23	6.66	6.91	9.69	8.45						

DISSOLVED OXYGEN SUMMARY STATISTICS

	Calendar Year 2013#	Period of Record (2009 - 2013)#
Minimum Daily Value [mg/L]	1.33 (Aug 26)	0.06 (Aug 02, 2010)
Maximum Daily Value [mg/L]	15.90 (Apr 4)	16.36 (Aug 25, 2012)
Mean of Daily Values [mg/L]	8.09	7.74



рΗ

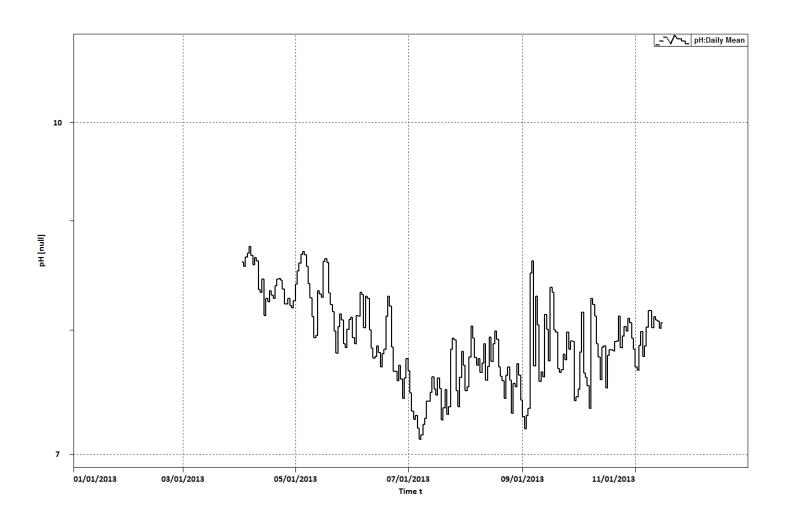
Day		Januar	у		Februar	у		March	l		April			May			June	
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
1													8.20	8.64	8.40	7.76	8.09	7.93
2										8.52	8.64	8.61	8.37	8.71	8.53	7.64	8.08	7.88
3										8.48	8.69	8.57	8.43	8.80	8.60	7.74	8.61	8.12
4										8.56	8.79	8.65	8.51	8.85	8.68	7.76	8.44	8.12
5										8.59	8.79	8.69	8.53	8.83	8.70	7.90	8.70	8.33
6										8.65	8.88	8.75	8.50	8.82	8.67	8.17	8.51	8.31
7										8.48	8.78	8.67	8.39	8.81	8.57	7.78	8.25	8.02
8										8.42	8.70	8.58	8.10	8.76	8.41	7.94	8.75	8.29
9										8.38	8.89	8.65	7.81	8.75	8.28	8.11	8.49	8.27
10										8.42	8.78	8.62	7.88	8.36	8.12	7.57	8.29	8.00
11										8.27	8.43	8.35	7.79	8.17	7.94	7.51	8.39	7.84
12										8.24	8.40	8.33	7.77	8.16	7.95	7.42	8.02	7.76
13										8.31	8.62	8.45	8.11	8.58	8.34	7.58	7.95	7.77
14										7.94	8.52	8.12	8.16	8.51	8.32	7.47	8.30	7.86
15										8.17	8.38	8.28	8.02	8.47	8.28	7.66	8.00	7.81
16										8.19	8.34	8.24	8.44	8.83	8.61	7.47	7.89	7.69
17										8.25	8.43	8.35	8.30	8.95	8.64	7.36	8.17	7.80
18										8.22	8.36	8.31	8.44	8.76	8.60	7.55	8.07	7.84
19										8.12	8.36	8.27	7.87	8.63	8.32	7.64	8.54	8.12
20										8.28	8.54	8.39	7.87	8.54	8.22	7.71	8.61	8.30
21										8.38	8.50	8.45	7.66	8.59	8.16	7.98	8.43	8.21
22										8.38	8.69	8.45	7.79	8.27	7.99	7.49	8.17	7.86
23										8.30	8.52	8.44	7.64	7.94	7.80	7.39	8.00	7.65
24										8.28	8.47	8.36	7.69	8.36	8.03	7.44	8.03	7.65
25										8.06	8.34	8.23	7.83	8.43	8.14	7.27	8.03	7.58
26										8.12	8.32	8.22	7.84	8.31	8.09	7.36	8.32	7.70
27										8.19	8.38	8.27	7.75	8.10	7.88	7.32	7.99	7.59
28										8.16	8.27	8.21	7.73	8.07	7.85	7.26	7.65	7.43
29										8.06	8.33	8.19	7.76	8.32	8.01	7.20	8.04	7.60
30										8.15	8.40	8.25	7.76	8.46	8.09	7.53	8.09	7.76
31													7.84	8.47	8.11			
Monthly										0 20	0 = 1	0 /11	9 N2	0 5 2	0 27	7.60	0 22	7.00
Average										8.30	8.54	8.41	8.03	8.52	8.27	7.60	8.23	7.90

рΗ

Day		July			August			Septemb	er		October	·		Novemb	er		Decemb	er
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
1	7.48	7.77	7.66	7.17	7.77	7.49	7.17	7.48	7.29	7.25	7.84	7.51	7.54	7.90	7.69			
2	7.34	7.62	7.48	7.31	7.72	7.53	7.07	7.33	7.19	7.32	8.47	7.81	7.42	7.90	7.66			
3	7.13	7.49	7.33	7.33	8.24	7.77	7.17	7.42	7.29	7.74	8.57	8.15	7.65	8.00	7.87			
4	7.15	7.42	7.26	7.76	8.34	8.04	7.20	8.14	7.35	7.27	8.29	7.64	7.86	8.08	7.98			
5	7.14	7.74	7.30	7.56	8.15	7.93	7.28	9.04	8.50	7.42	7.94	7.60	7.45	8.00	7.78			
6	7.07	7.31	7.20	7.42	8.04	7.77	8.21	8.94	8.62	7.33	7.87	7.53	7.74	7.97	7.86			
7	7.01	7.27	7.11	7.27	8.02	7.70	7.25	8.36	7.70	7.23	7.69	7.35	7.62	8.36	8.03			
8	7.01	7.31	7.15	7.30	8.30	7.76	7.58	8.83	8.29	7.69	8.66	8.28	7.93	8.34	8.17			
9	7.09	7.51	7.23	7.24	8.26	7.64	7.40	8.38	8.04	7.98	8.45	8.22	7.97	8.32	8.17			
10	7.19	7.35	7.28	7.33	8.13	7.72	7.25	8.32	7.57	7.51	8.51	8.12	7.88	8.14	8.02			
11	7.26	7.65	7.41	7.47	8.25	7.88	7.34	8.05	7.65	7.71	8.10	7.88	8.05	8.18	8.11			
12	7.22	7.73	7.41	7.39	7.89	7.58	7.23	8.44	7.61	7.57	8.05	7.77	8.00	8.15	8.08			
13	7.34	7.79	7.48	7.26	8.00	7.69	7.52	8.52	8.14	7.32	7.94	7.58	7.96	8.18	8.07			
14	7.35	7.78	7.61	7.63	8.33	7.94	7.53	8.43	8.01	7.65	8.04	7.85	7.92	8.09	8.01			
15	7.28	8.26	7.51	7.34	8.12	7.74	7.35	8.52	7.74	7.68	8.05	7.86	8.03	8.10	8.06			
16	7.24	7.68	7.46	7.48	8.31	7.88	7.81	8.76	8.38	7.32	7.72	7.52						
17	7.25	8.20	7.60	7.48	8.52	7.99	8.05	8.51	8.33	7.43	8.04	7.79						
18	7.18	7.90	7.51	7.36	8.28	7.92	7.46	8.45	8.00	7.49	8.19	7.83						
19	7.14	7.60	7.26	7.33	8.07	7.69	7.44	8.35	7.98	7.64	8.06	7.83						
20	7.11	7.67	7.36	7.30	8.09	7.61	7.42	8.03	7.68	7.65	8.09	7.82						
21	7.17	8.24	7.50	7.33	7.91	7.57	7.25	7.92	7.64	7.54	8.16	7.90						
22	7.18	7.54	7.31	7.08	7.71	7.43	7.49	7.86	7.67	7.61	8.22	7.91						
23	7.14	7.59	7.37	7.23	8.23	7.62	7.59	8.07	7.79	7.76	8.28	8.12						
24	7.44	8.29	7.83	7.30	8.07	7.69	7.50	7.99	7.75	7.68	8.16	7.85						
25	7.41	8.45	7.93	7.21	7.94	7.58	7.50	8.49	7.98	7.70	8.16	7.95						
26	7.39	8.36	7.92	7.04	7.61	7.31	7.58	8.06	7.84	7.89	8.14	8.03						
27	7.33	7.81	7.50	7.37	7.81	7.55	7.55	8.39	7.91	7.87	8.09	7.99						
28	7.22	7.59	7.37	7.21	7.99	7.52	7.55	8.31	7.90	7.94	8.24	8.10						
29	7.42	7.84	7.60	7.28	8.22	7.71	7.27	7.97	7.42	7.88	8.24	8.06						
30	7.33	8.08	7.82	7.21	8.01	7.62	7.22	7.83	7.45	7.59	8.13	7.93						
31	7.42	8.05	7.70	7.25	7.59	7.42				7.69	8.05	7.84						
Monthly																		
Average	7.24	7.77	7.47	7.33	8.06	7.69	7.44	8.24	7.82	7.59	8.14	7.86						

pH SUMMARY STATISTICS

	Calendar Year 2013#	Period of Record (2009 - 2013)#
Minimum Daily Value	7.01 (Jul 8)	6.77 (Jul 7, 2012)
Maximum Daily Value	9.04 (Sep 5)	9.52 (Jun 27, 2009)
Mean of Daily Values	7.92	7.95



TURBIDITY [NTU]

Day		Januar	у		Februar	У		March	l		April		May			June		
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
1													94.10	141.70	112.80	65.80	99.60	80.84
2										28.10	35.90	31.01	95.20	142.90	114.06	60.80	98.80	81.02
3										26.00	48.70	37.50	92.90	143.80	115.27	69.20	134.70	96.32
4										26.60	44.80	34.21	94.20	138.90	115.72	73.90	126.60	99.87
5										29.90	126.20	48.53	92.60	136.30	114.82	78.10	136.10	104.66
6										36.60	91.70	52.01	95.30	143.00	116.98	79.40	109.00	91.32
7										33.90	67.00	45.37	92.70	165.30	122.39	74.00	103.10	86.66
8										34.00	78.80	48.72	92.20	186.20	133.02	77.60	146.60	108.86
9										24.80	78.60	39.14	99.90	190.60	140.21	82.50	118.80	100.83
10										31.90	78.10	39.12	76.60	120.00	104.63	60.80	102.20	79.07
11										71.40	142.50	105.33	65.70	101.90	83.37	51.60	126.90	84.79
12										23.90	104.60	61.06	66.70	102.60	86.60	51.50	94.60	76.44
13										21.20	36.30	27.26	85.90	118.90	101.93	66.50	98.30	79.59
14										25.00	126.10	101.55	91.40	116.90	103.44	65.80	136.20	97.69
15										76.80	115.50	93.06	91.00	109.90	100.78	77.00	108.60	92.86
16										80.80	104.00	90.35	98.90	154.40	123.81	65.80	101.70	81.87
17										78.50	136.20	99.90	90.10	130.90	106.13	57.60	117.20	88.32
18										69.00	213.40	105.84	79.80	125.90	103.00	71.80	107.10	89.39
19										55.50	189.10	103.47	73.20	128.90	101.14	75.20	140.00	106.00
20										52.00	78.40	64.24	83.30	130.40	99.99	85.00	146.80	115.67
21										54.20	77.40	64.56	51.40	111.40	82.67	87.40	126.60	104.25
22										46.10	70.40	56.67	61.30	96.90	77.12	63.90	110.40	87.02
23										38.00	94.60	53.17	52.60	83.10	70.33	48.00	105.50	74.83
24										37.30	82.20	56.19	73.90	110.80	92.18	54.90	109.70	77.40
25										38.90	114.60	75.80	77.70	118.10	96.97	44.80	102.40	75.71
26										84.70	109.30	99.67	77.30	118.00	94.44	53.60	130.80	83.56
27										64.60	116.00	92.70	68.20	95.70	79.36	51.90	107.30	79.96
28										60.40	96.00	77.04	69.20	93.30	80.78	50.00	81.60	64.76
29										56.20	132.70	89.13	77.20	113.60	89.47	43.20	111.50	73.61
30										94.90	117.00	104.86	65.80	122.40	90.66	65.80	108.00	84.98
31													68.40	107.30	87.02			
Monthly										40.22	100 21	60.00	OO 47	125.01	101 22	CE 11	114.00	00 27
Average										48.32	100.21	68.88	80.47	125.81	101.33	65.11	114.89	88.27

TURBIDITY [NTU]

Day		July			August			Septembei	r		October			November		December		
	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean	min	max	mean
1	73.60	86.20	79.84	39.90	97.10	76.28	37.90	73.70	53.59	47.50	89.20	67.36	71.30	90.70	80.01			
2	61.50	78.70	71.95	57.00	83.70	73.43	26.90	64.00	45.12	42.10	105.40	79.36	64.50	91.20	79.94			
3	49.10	78.20	63.93	56.20	110.80	83.44	42.30	77.80	60.03	70.00	95.50	82.56	83.10	95.80	90.54			
4	47.70	73.20	60.87	72.50	119.90	96.38	42.40	94.80	67.00	27.20	82.80	65.34	87.80	98.10	93.34			
5	37.90	101.40	61.86	72.60	104.90	89.08	62.70	121.50	93.48	46.50	74.20	62.89	64.70	96.30	85.76			
6	32.10	62.80	49.57	59.90	93.10	77.52	68.50	104.80	88.34	43.20	76.00	64.12	84.80	97.40	91.48			
7	28.20	66.50	45.47	51.20	99.10	75.79	39.50	88.20	64.44	31.00	76.90	50.29	76.60	108.70	94.76			
8	38.60	62.80	48.82	49.80	97.60	74.77	55.20	107.20	84.91	67.60	101.50	86.81	88.10	104.20	96.74			
9	42.90	68.20	51.16	62.60	109.40	77.54	36.60	90.40	71.30	70.20	92.30	83.34	92.30	108.40	98.75			
10	41.50	61.20	53.63	58.10	100.80	77.83	20.10	91.30	63.12	52.00	94.90	79.13	85.20	96.10	90.40			
11	55.30	85.00	70.71	67.20	115.50	86.26	36.70	93.70	68.76	65.00	87.90	75.88	91.50	97.20	94.43			
12	51.60	101.90	72.25	53.60	99.10	70.86	28.90	87.80	61.45	60.90	86.60	74.44	92.40	103.00	97.48			
13	65.30	103.60	79.73	49.20	95.90	76.31	52.20	89.20	78.46	37.30	87.70	65.40	91.50	104.70	98.10			
14	67.70	112.50	90.89	70.10	110.30	89.28	63.10	95.00	80.95	68.50	92.80	81.59	90.50	105.00	98.75			
15	39.90	160.80	78.50	59.90	112.10	88.08	50.80	88.00	71.50	73.70	91.90	83.03	96.10	100.60	97.92			
16	68.90	118.90	90.11	70.20	123.00	94.99	60.90	105.70	85.61	38.90	95.40	69.70						
17	63.10	178.60	109.72	65.00	110.90	91.92	70.40	99.70	87.86	61.60	92.00	82.72						
18	59.90	159.30	110.15	59.60	121.10	92.41	44.20	93.70	79.23	58.80	109.80	87.40						
19	44.50	110.10	73.13	47.30	122.40	84.16	60.50	102.10	82.20	69.20	96.80	85.79						
20	45.10	112.60	72.42	50.20	119.10	82.70	53.20	95.10	72.05	73.10	97.80	83.77						
21	53.20	165.20	92.70	47.70	108.20	77.16	36.90	90.00	72.24	79.10	99.30	85.85						
22	37.70	77.10	58.01	23.70	88.00	62.84	57.90	81.40	73.42	67.70	104.70	86.22						
23	32.60	83.20	58.83	52.40	114.20	77.81	57.70	100.70	78.55	73.90	103.20	93.62						
24	67.00	127.00	94.49	44.80	105.40	78.06	61.70	95.90	80.66	74.60	95.90	81.94						
25	72.40	155.90	106.91	35.40	98.60	68.55	55.80	101.80	82.91	77.90	101.30	90.81						
26	66.90	145.30	109.41	15.60	82.50	57.53	65.30	102.30	83.78	91.30	100.20	95.24						
27	56.60	93.00	73.69	45.40	90.20	65.79	65.30	103.10	85.81	85.00	102.60	92.34						
28	41.40	90.20	64.84	38.60	90.20	62.64	68.40	95.50	83.69	87.60	107.10	97.33						
29	60.50	97.70	80.87	44.30	119.30	77.30	41.70	79.30	58.21	91.00	108.00	98.56						
30	66.70	113.50	93.01	31.50	102.90	72.37	29.30	92.10	61.48	84.30	105.50	95.56						
31	69.60	111.70	91.25	48.60	88.20	68.58				83.40	98.00	90.54						
Monthly																		
Average	52.87	104.59	76.09	51.62	104.31	78.31	49.77	93.53	74.01	64.52	95.26	81.26						

TURBIDITY SUMMARY STATISTICS

	Calendar Year 2013#	Period of Record (2009 - 2013)#
Minimum Daily Value [NTU]	15.6 (Aug 26)	-2.1 (Aug 17, 2009)**
Maximum Daily Value [NTU]	213.4 (Apr 18)	756.80 (May 23, 2010)
Median of Daily Mean [NTU]	82.02	49.42

^{**}Negative turbidity values were not removed from record data within acceptable error range

